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STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

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HEART DISEASE IN ADULT LIFE

More than a year ago we directed attention to a decline in the deathrates from heart diseases among children and young adults. In middle and later life, on the other hand, the toll of heart diseases has been rising—much more decisively among males than among females. The following figures will show what the tendency has been between 1911 and 1929 among white males and white females in the experience of the Industrial Department of the Metropolitan Life Insurance Company.

Percentage Annual Increase (+) or Decrease (—) in the Deathrate from Heart Diseases.* Metropolitan Life Insurance Company. Industrial Department. 1911 to 1929.

Age Period	White Males	White Females
20 to 24	—1.2	—1.9
25 to 34	—2.5	—2.5
35 to 44	—1.3	—1.9
45 to 54	+ .6	— .5
55 to 64	+1.4	+ .1
65 to 74	+1.1	+ .7

*Pericarditis, acute endocarditis and myocarditis, angina pectoris, "other diseases of the heart."

As in previous studies, we find a substantial reduction in the number of deaths certified as due to heart disease at ages under 45. The improvement in the deathrate is a little more pronounced for young females than for males. A reduction of 2.5 per cent. *per year* in the deathrate, over a nineteen-year period, at the ages between 25 and 34 years, is a substantial and favorable item in the mortality

record. A gratifying return was likewise shown for young people between 20 and 24 years and for the older group between 35 and 44 years. These figures suggest the very interesting question whether we are not now witnessing among our people under 45 years of age the favorable effect of public health measures at work during the last forty or fifty years in checking the infections which damage the heart and allied structures? Is there a growing proportion of the population with hearts unimpaired by the sequelæ of scarlet fever, diphtheria, typhoid fever, syphilis and the streptococcus? It appears so, although additional investigation is required to settle this point. May we not hope for less and less heart disease of infectious origin as the population is further benefited by preventive medicine?

The deathrate from heart disease after age 45 is obviously a different matter. There can be no question as to the fact of a persistent and steady rise, much more striking among males than among females. At these older ages, not enough information is at hand at the present time to permit a classification of the heart lesions causing death into etiologic types. But it is obvious that factors other than those of acute infections in adolescence now take a more prominent part. Much of the heart disease after age 45 is definitely of the hypertensive or arteriosclerotic type. This, in turn, may well be the result, in some measure, of the increasing stress and strain of modern life. Here certainly is a field for research of the very greatest importance.

For this reason, it is especially interesting to be able to report the preliminary results of an investigation conducted by the Medical Division of the Metropolitan Life Insurance Company into the incidence of heart disease among all of its Home Office employees who have passed age 40. A routine electro-cardiographic examination has disclosed that five per cent. suffer from definite lesions, as to the significance of which there can be no serious doubt. One per cent. of the cases are represented by auricular fibrillation, and 2.4 per cent. by heart block. Independent of these conditions, severe myocardial degeneration was present in 1.6 per cent. of the cases.

The clear-cut results of this work represent the first real contribution to the study of the incidence of heart disease in a large and employed group of the population. It is much to be hoped that similar investigations will be launched in whole communities, including men, women and children, and by other large employers of labor, so as to determine by these more accurate methods how much heart disease appears in each of the age groups and how the undoubted cases may

be classified into the various types of the disease. Nothing short of this is necessary, in order that we may proceed with the next step in the development of a campaign, similar to that which has been so successful in connection with tuberculosis, to bring as much of this dread condition under control as is scientifically possible.

THE DECLINING MORTALITY FROM ACUTE RHEUMATISM

In the STATISTICAL BULLETIN of August, 1921, we showed that there had been a very marked drop in the mortality from acute rheumatism during the second decade of this century. In both the wage earning population (as represented by the Industrial policyholders of the Metropolitan Life Insurance Company) and among the people at large, the deathrate had declined approximately 40 per cent. within a period of ten years.

It was the opinion of several noted clinicians with whom we corresponded at that time that the decline was due, in part, at least, to the increased practice of tonsil operations and to marked progress in dental and oral hygiene during the 1910-1920 decade. Still another possible factor, it was suggested, was the improvement in the milk supplies of cities, inasmuch as efficient pasteurization of milk removes, to a great extent, the danger of epidemics of septic sore throat and of other focal infections which, in turn, are recognized causative factors in acute rheumatism.

In 1921, we ventured to say that, as time went on, we might expect a further drop in the acute rheumatism deathrate, as more and more attention would be given to reducing the incidence of focal infections. More tonsil operations would surely be done; still greater stress would be laid on mouth and tooth hygiene; and the medical profession would become more and more skilled in dealing with the difficult symptomatology of acute rheumatic affections, and would treat their cases more successfully because the disease would be identified earlier in its course. Our expectation of a continued drop from 1920 on has been realized. The 1920 acute rheumatism deathrate of 4.7 per hundred thousand among Metropolitan Industrial policyholders may be compared with 3.2 in 1929; and in the general population, the 1920 figure was 3.8 against 2.6 in 1927, the latest year for which a figure is available. While the drop was not continuous in either case, the downward trend is unmistakable. We believe that it will be still further accentuated with increasing recognition by the public of the dangers arising out of focal infections and of the benefits derived from oral hygiene and expecially from the early removal of oral infections.

The decline in the mortality from acute rheumatism has been accompanied by a drop in the deathrate from heart disease in all age ranges up to 45 years, as we have shown on page 1 of this BULLETIN. This is particularly encouraging because it shows that much heart disease may be prevented by removing the causes which have been responsible for this condition in childhood, adolescence and early adult life.

Death Rates per 100,000 from Acute Rheumatism. Metropolitan Life Insurance Company. Industrial Department (Ages One and Over) and U. S. Reg. Area (All Ages) 1910 to 1929.

Year	Metropolitan	U. S. Reg. Area
1910	*	6.2
1911	7.7	6.0
1912	6.9	5.3
1913	6.5	5.8
1914	6.2	5.4
1915	6.0	4.9
1916	5.1	4.6
1917	5.6	4.6
1918	4.9	3.8
1919	4.0	3.4
1920	4.7	3.8
1921	4.2	3.7
1922	3.9	3.2
1923	4.0	3.0
1924	3.9	3.3
1925	3.4	2.7
1926	3.4	2.7
1927	3.4	2.6
1928	3.0	*
1929	3.2	*

*Not available.

RECENT GAINS IN INFANT MORTALITY

The whole civilized world has begun to realize the value of infants and is busily engaged in saving their lives. This is the chief cause of the lower general mortality and increased life expectation which has characterized the last decade.

The lowest infant mortality rates prevail in far away New Zealand, where the figures have reached the extraordinarily low level of 36 infant deaths per thousand live births. This means that only three and one-half per cent. of all the children born die before the year is out. In our own country, the figure is nearer seven per cent., but this

represents the very remarkable gain of 33 per cent. since 1915, when the Birth Registration Area was established and infant mortality figures first became available for large parts of the United States. Our infant mortality rate of 67 per thousand births compares favorably with the rates for most other advanced countries.

Europe may be separated into two divisions: those countries with good health standards, and those where public health is a newer development and now in the process of organization. In the first group belong the Scandinavian countries, Holland, England and Wales, the Irish Free State and Switzerland. The infant mortalities prevailing there are as low, or lower, than in the United States. The second division includes countries in Central, Southern and Eastern Europe. The infant mortality rates are twice, and even three times as high as in the others. In Russia, for example, the last rate available is 217 infant deaths per thousand live births. A similarly high

Infant Mortality per 1,000 Living Births in the United States and Certain Foreign Countries

Country	1910–14	1924	1925	1926	1927	1928	1929
United States Birth Registration Area	*	71	72	73	65	69	67
England and Wales	109	75	75	70	70	65	74
Scotland	110	98	91	83	89	86	87
Irish Free State	87	72	68	74	71	68	70
Norway	66	50	50	48	51	*	*
Sweden	72	60	56	57	62	62	*
Denmark	99	85	80	84	84	81	*
Finland	112	107	85	86	97	84	*
Latvia	*	101	107	88	96	96	*
Germany	163	109	105	102	97	89	*
Czechoslovakia	*	148	146	154	157	146	142
Austria (pre-war territory)	191*a*	128	119	123	125	120	*
Hungary	197	193	168	167	185	177	182
Switzerland	102	62	58	57	57	54	52
Netherlands	104	61	58	61	59	52	59
Belgium	138*a*	89	94	97	92	87	*
France	121*a*	85	89	97	83	91	*
Spain	151	140	136	125	127	125	123
Italy	138	126	119	127	120	*	*
Bulgaria	149*b*	150	152	127	*	*	*
Ukraine	*	128	146	141	148	136	*
Russia	*	224	229	193	217	*	*
Australia	72	57	53	54	54	53	*
New Zealand	57	40	40	40	39	36	*

*Not available.
*a*1910–1913.
*b*1910–1912.

figure prevails in Roumania, and conditions are only slightly better in Hungary.

The one gratifying fact in the situation is the great improvement which has been registered in most countries, and the realization by those responsible for the public health that much more can be accomplished. If all would do what the Netherlands, Switzerland and the Antipodes have actually realized, hundreds of thousands of lives would be saved each year and the individual countries would more than make good the losses in their population counts which have been brought about by their declining birth rates.

The table on page 5 shows the infant mortality rates for the last twenty years in countries which have kept fairly reliable records of mortality.

EXPECTATION OF LIFE IN 1929 AMONG INDUSTRIAL POLICYHOLDERS

In accordance with our annual custom, we publish herewith two tables showing the expectation of life in 1929, at birth, and at several ages, for the Industrial policyholders of the Metropolitan Life Insurance Company. The corresponding figures for 1928 are also shown, for comparison, as well as a series of earlier figures for the expectation of life at birth.

Expectation of Life at Birth, Metropolitan Life Insurance Company. Industrial Department 1911 to 1929

Year	Expectation in Years
1929	55.78
1928	55.88
1927	56.42
1926	55.02
1925	55.51
1924	55.62
1923	54.55
1922	55.04
1921	55.08
1919-1920	51.14
1911-1912	46.63
Gain 1929 since 1911-1912	9.15

The figures invite the following comments: For the entire body of policyholders, there has been very little change from 1928 to 1929 in the expectation of life. A slight decline is shown, which at the maximum (age 65) amounts barely to one-fifth of a year, or, say, ten weeks. As a matter of fact, this slight decline is due wholly to the rather high deathrates that occurred in January and February of 1929, owing to the epidemic prevalence of influenza and pneumonia. Had it not been for this circumstance, the record for 1929, namely, 55.78 years at birth, would have bettered that for 1928. Even as it is, there are only two prior years which presented a better expectation of life at birth than 1929. These are 1927, a record health year with an expectation of life at birth of 56.42 years; and 1928, with 55.88 years. If we view the series of figures for the expectation of life at birth since 1911-1912, we see in it a practically unbroken line of constantly increasing figures, except that the outstanding record of the year 1927 has not been equaled since. The slight decline from 1928 to 1929 is practically negligible, especially in view of the facts presented above. At age ten and higher ages, there is little difference between the figures for the last three years 1927, 1928 and 1929, because the exceptional showing of the year 1927 was due chiefly to low deathrates among infants and children.

Inspection of the separate figures in the classification by sex and color shows that the slight decline from 1928 to 1929 was concentrated mainly among white males and among colored persons. For white females at age ten and over, the figures for 1929 are, for all practical purposes, identical with those for 1928, except perhaps at ages fifty to sixty, where the decline in the expectation of life ranges from one month to six weeks.

We may sum up the situation by saying that the year 1929, on the whole, practically duplicated the health conditions of 1928. The mortality conditions appear to have become stabilized at a point which gives a gain of over nine years in the expectation of life at birth since the series began in 1911. In the general population of the United States, the corresponding gain has been only about five years. This is by no means a negligible item. It emphasizes, nevertheless, the fact that the greatest extension of the life-span and the greatest gains in health and well-being have been made in the wage-earning group of the population.

Expectation of Life at Selected Ages Above 10 Years. By Color and Sex. Metropolitan Life Insurance Company Industrial Department, 1928 and 1929

Age	Total Industrial Department		White				Colored			
			Males		Females		Males		Females	
	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
10	52.20	52.34	51.20	51.74	55.14	55.10	44.09	44.48	45.48	46.00
15	47.64	47.80	46.65	47.22	50.49	50.42	39.86	40.24	41.28	41.84
20	43.35	43.52	42.27	42.83	46.07	46.03	36.17	36.51	37.74	38.36
25	39.28	39.45	38.03	38.58	41.87	41.89	32.74	33.08	34.51	35.06
30	35.26	35.41	33.84	34.36	37.69	37.71	29.27	29.64	31.20	31.61
35	31.25	31.38	29.72	30.18	33.49	33.52	25.90	26.24	27.81	28.23
40	27.35	27.49	25.78	26.21	29.35	29.41	22.68	22.99	24.50	24.97
45	23.64	23.77	22.12	22.50	25.34	25.42	19.64	19.94	21.40	21.84
50	20.08	20.23	18.70	19.04	21.44	21.54	16.72	17.06	18.43	18.87
55	16.70	16.86	15.53	15.80	17.73	17.86	14.07	14.42	15.61	16.08
60	13.59	13.77	12.64	12.87	14.35	14.48	11.64	12.09	12.95	13.51
65	10.89	11.08	10.08	10.39	11.47	11.54	9.62	10.12	10.65	11.30
70	8.63	8.78	7.94	8.25	9.08	9.10	7.99	8.34	8.87	9.42

HEALTH RECORD FOR JULY, 1930

Although the July deathrate among American and Canadian wage-earners and their families was a little above the average for that month, the cumulative mortality rate for the seven elapsed months of 1930 showed a marked reduction as compared with last year. For policyholders living west of the Rocky Mountains, the July deathrate was 6.0 per thousand, as compared with 6.8 last year; in the rest of the United States, the 1930 figure was 8.6, as compared with 8.5, and in Canada, 8.2 against 7.8. In all sections of both countries, the cumulative deathrate for the January-July period was well below that for the like part of last year.

In spite of the slight setback in July, there is still excellent prospect that the completed year 1930 will register the lowest deathrate of all time, not only among the wage-earning populations of the United States and Canada, but among the population at large. There has been no widespread prevalence of any infectious or contagious disease; and all of the diseases which are the more sensitive indices of the state of the public health are recording deathrates well below the average. The cumulative mortality for the group of four principal epidemic diseases of childhood, for example, is only 18.7 per 100,000, as com-

pared with 23.3 for the like period of 1929. This marks a decline of 20 per cent. in a single year. Only eight years ago (at this time of the year) the deathrate for diphtheria alone was about the same as the combined rates, in 1930, for diphtheria, measles, scarlet fever and whooping cough. The diphtheria deathrate for the January-July period (6.7 per hundred thousand) marks a reduction of 28 per cent. from that for the like period of 1929.

As month follows month, the 1930 mortality record for tuberculosis becomes more and more favorable. The reduction in the deathrate for all forms of tuberculous disease, up to the end of July, was 9.1 per cent.; for tuberculosis of the respiratory system alone, it was 10.9 per cent. Last year, we were not able to announce until December the certainty that the 1929 mortality rate for tuberculosis would be the lowest ever recorded up to that time in the United States. This year the gain has been so much more pronounced that, on the basis of only seven months' data, it has become a *certainty* that 1930 will register a new minimum for tuberculosis; and there is a strong *probability* that the largest year-to-year drop of all time will be accomplished. By the end of the present decade, the tuberculosis deathrate in the United States bids fair to drop to—or below—40 per hundred thousand.

There are still other noteworthy items in the health record of 1930. The influenza deathrate is approximately 30 per cent. of last year's figure; and that for pneumonia has dropped sharply. The mortality from the principal "degenerative" conditions has declined; deaths from diabetes, which have been increasing persistently in recent years, have been less numerous in 1930. Even the cancer deathrate is running slightly below that for 1929, after showing an almost unbroken rise over a long period of years. The mortality rate for diseases incidental to pregnancy and childbirth is 12.4 per cent. below the figure for the corresponding part of 1929. A new low point for these diseases will be reached in 1930.

Even in the field of deaths from violence, there are encouraging items. Suicides and homicides, it is true, have been a little more numerous than in 1929; but there has been a slight decline in accidental deaths. While the automobile accident deathrate showed an increase, at the end of July, of 4.4 per cent., this unfavorable margin is considerably less than that recorded earlier in the year.

The deathrate for the general population of the large cities of the United States in July was slightly lower than that for the previous month, but somewhat higher than that which prevailed in July, 1929.

There was more sickness in July, as compared with June, from poliomyelitis and typhoid fever, but there were fewer cases of diphtheria, influenza, measles, scarlet fever and smallpox. Comparison with July, 1929, shows an increase in morbidity from measles, poliomyelitis, smallpox and typhoid fever, with less sickness from diphtheria, influenza and scarlet fever.

Based on reports from 42 States, there were more than twice as many cases of poliomyelitis in July as in June (758, as compared with 338). While the increase was fairly general throughout these States, it was particularly marked in California, where 374 cases were reported in July, against 195 in June, and in Louisiana, where the corresponding figures were 91 and 46. An increase in typhoid fever is expected at this time of the year. It has been the most pronounced in Maryland, North Carolina, Georgia, Kentucky, Tennessee, Alabama and Arkansas.

The following are among the more noteworthy public health developments of the month. Lethargic encephalitis, mumps, tularemia, undulant fever, and tetanus were made reportable by the NEW JERSEY STATE DEPARTMENT OF HEALTH. The COMMITTEE ON COMMUNICABLE DISEASE CONTROL of the WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION is preparing a report on the incidence and trend of communicable diseases, with particular reference to diseases most prevalent among children. The report will be of great interest to directors of communicable disease work, as well as to health officers, because of procedures recommended for the control of about 50 individual communicable diseases. Psittacosis, as well as communicable skin diseases common among children, will have a place in the report.

The table on page 11 shows the mortality among Industrial policyholders for July, 1930; June, 1930, and July, 1929, together with the cumulative deathrate for the first seven months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes, Premium-Paying Business in Industrial Department (Annual Basis)

MONTHS OF JULY, 1930; JUNE, 1930, AND OF JULY, 1929

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*				
	July 1930	June, 1930	July 1929	Cumulative, Jan.-July	
				1930	1929
TOTAL—ALL CAUSES	843.7	832.5	838.3	912.6	1019.9
Typhoid fever	2.6	1.9	3.3	1.5	1.9
Measles	2.3	5.5	2.7	4.3	4.3
Scarlet fever	1.8	2.1	2.4	3.1	3.3
Whooping cough	4.9	3.9	5.9	4.6	6.4
Diphtheria	4.3	3.6	6.6	6.7	9.3
Influenza	4.2	7.9	5.3	18.7	63.5
Tuberculosis (All forms)	85.0	82.8	88.6	85.5	94.1
Tuberculosis of resp'y system	74.4	71.9	77.3	74.2	83.3
Cancer	79.3	76.1	80.0	76.5	78.2
Diabetes mellitus	16.7	15.6	15.7	19.2	20.2
Cerebral hemorrhage	60.2	57.6	54.2†	61.9	61.2†
Organic diseases of heart	133.7	139.6	125.9	153.2	160.3
Pneumonia (All forms)	39.2	58.4	40.0	92.5	113.7
Other respiratory diseases	10.2	11.8	8.5	12.2	13.7
Diarrhea and enteritis	22.9	15.9	20.8	14.0	15.3
Bright's disease (Chronic nephritis)	66.9	69.9	63.6	70.5	73.8
Puerperal state	11.4	12.0	14.7	12.7	14.5
Suicides	9.3	9.9	8.1	9.6	8.8
Homicides	7.8	4.9	6.2	6.5	6.3
Other external causes (excluding suicides and homicides)	80.1	61.9	80.6	60.6	62.8
Traumatism by automobiles	22.2	20.1	23.1	18.8	18.0
All other causes	200.9	191.3	205.2	198.9	208.2

*All figures in this table include insured infants under one year of age. The rates for 1930 are subject to slight correction, as they are based on provisional estimates of lives exposed to risk.

†Rate not comparable with that for 1930.

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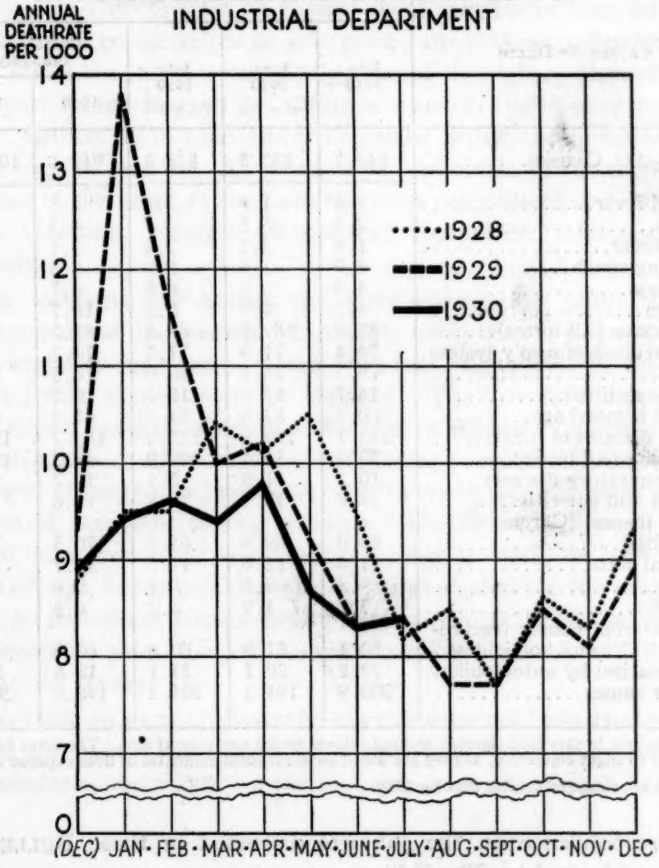
INDUSTRIAL DEPARTMENT



1928*	9.5	9.5	10.4	10.1	10.5	9.5	8.2	8.5	7.7	8.6	8.3	9.3
1929*	13.8	11.6	10.0	10.2	9.2	8.3	8.4	7.7	7.7	8.5	8.1	8.9
1930	9.4	9.6	9.4	9.8	8.7	8.3	8.4					

* Rates for 1928 and 1929 are final.

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